ADDIS ABABA UNIVERSITY
ADDIS ABABA INSTITUTE OF TECHNOLOGY
SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING
COURSE TITLE: - CENG 6208 – Analysis of Slopes, Earth Retaining Structures and Underground Conduits

COURSE OUTLINE

1 Advanced Topics in Lateral Earth Pressure
- 1.1 Introduction
- 1.2 Review of the Classical Methods of Analysis
- 1.3 Lateral Earth Pressure with Curved Failure Surface
- 1.4 Soil Properties for Lateral Earth Pressure Computations
- 1.5 Uniform and non-uniform surcharge loadings
- 1.6 Effect of Earthquake on Lateral Earth Pressure
- 1.7 Comments on the Conventional Lateral Earth Pressure Theories
- 1.8 Advanced Methods of Analysis of Lateral Earth Pressures.

2 Analysis and Design of Sheet Pile Structures
- 2.1 Introduction
- 2.2 Analysis and Design of cantilever and Bulkheads sheet pile walls
- 2.3 Advanced Methods of Analysis for Sheet Pile Walls.

3 Braced Cuts and Cofferdams
- 3.1 Braced Cut
  - 3.1.1 Introduction
  - 3.1.2 Pressure envelope for Braced- Cut Design
  - 3.1.3 Pressure envelope for Cuts in Layered soils
  - 3.1.4 Design of Various Components of a Braced Cut
  - 3.1.5 Bottom Heave of a cut in Clay
  - 3.1.6 Stability of the Bottom of a Cut in Sand
- 3.2 Cofferdams
  - 3.2.1 Introduction
  - 3.2.2 Types and Use of Cofferdams
  - 3.2.3 Stability Analysis of Cofferdams
  - 3.2.4 Bearing capacity of cellular cofferdams
  - 3.2.5 Settlement of cellular cofferdams
  - 3.2.6 Construction Procedures of Cellular Cofferdam
  - 3.2.7 Recent advances in cofferdam design and analysis

4 Underground Conduits
- 4.1 Introduction
- 4.2 Types of Underground Conduits
- 4.3 Loads on Conduits due to Surface loads
- 4.4 Supporting Strength of Conduits

5 Slope Stability Analysis

- 5.1 Introduction
- 5.2 Limit Equilibrium Methods
- 5.3 Three Dimensional Slope Stability Analysis
- 5.4 Effect of Earthquakes on the Stability of Slopes
- 5.5 Advanced techniques of Slope Stability Analysis
- 5.6 Improving Stability of Slopes

6 Reinforced Earth Technology

- 6.1 Introduction
- 6.2 Principle and Advantages of Reinforced Earth
- 6.3 Behavior of Reinforced Earth Structures
- 6.4 Methods of Analysis of Reinforced Earth Retaining Structures
- 6.5 Applications
- 6.6 Recent advances in the design and analysis of reinforced earth retaining structures

References

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2. Earth and Rock fill dams
   By Bharat Singh and H . D Sharma
3. Foundation Analysis and Design
   By Joseph E. Bowles
3. Principles of Foundation Engineering
   By Braja M. Das
4. Foundations, Retaining and Earth Structures
   By Tschebotarioff, G.P
5. Foundation Design Principles and Practices
   By Donald P. Coduto
6. Slope Stability Analysis and Stabilization
   By Y.M. Cheng and C.K. Lau
7. Slope Stability Analysis by the Limit Equilibrium Method
   By Yang H. Huang
8. Basics of Retaining wall Design
   By Hugh Brooks
9. Soil Retaining Structures -Development of Models for Structural Analysis
   By Klaas Jan Bakker
10 Soil Strength and Slope Stability
   By J. Michael Duncan , Stephen G. Wright and Thomas L. Brandon
11. Earth reinforcement and soil structure s
   By Colin J. F. P. Jones ,